WSJ.com THE WALL STREET JOURNAL. ONLINE

September 23, 2005

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Dangerous Mix

Oil, Saltwater Mar Louisiana Coast, Threaten Future

Katrina Dumps 193,000 Barrels Over Damaged Marshlands; Fishing Areas Are Polluted

Hurricane Rita Delays Work

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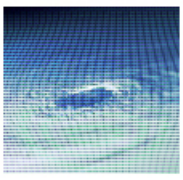
September 23, 2005; Page A1

NAIRN, La. -- More than three weeks after Katrina came ashore in Louisiana, the Coast Guard says the storm's surges and winds unleashed at least 40 oil spills -- 10 of which are major -- from ruptured pipelines and battered oil-storage facilities. In total, at least 193,000 barrels of oil and other petrochemicals were blown or driven by tides across the fragile marshy ecosystems and populated areas of the Plaquemines and St. Bernard parishes, southeast of New Orleans.

The spills, the largest ever loss of oil in the state, approach the scale of the famous 1989 Exxon Valdez tanker spill, which dumped 240,000 barrels of crude oil in the fish-rich waters of Alaska's Prince William Sound.

Katrina simultaneously set in motion another toxic event along the battered coast of Louisiana. A monumental surge of saltwater flooded tens of thousands of acres of vulnerable freshwater marsh. Much of the water has been trapped for three weeks by the levees designed to keep it out and has become a stew mixed with other effluent from ruined houses, businesses, cars and sewage-treatment plants. Large swaths of salt-burned wetlands may take years to recover.



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The unprecedented double whammy vastly complicates the cleanup and will slow the pace at which some residents can repopulate many small Mississippi River towns. Also at risk is the commerce that thrives in the coastal marshes, the area's wildlife and natural beauty and the supporting role played by open wetlands in mitigating flood and storm damage.

Already thousands of acres of orange orchards -- burned brown by salt-water contamination -- have died in lower Plaquemines. Commercial fishing grounds here and in nearby St. Bernard Parish have been scoured by polluted storm runoff. The area's commercial fishery infrastructure has been badly damaged and in some cases destroyed. Early reports from air reconnaissance indicate that numerous outlying sandy barrier islands that once sheltered bays full of fish have been badly eroded by punishing waves.

Coastal Louisiana's wetland produces a third of the nation's commercial seafood -- about a billion pounds of fish, crab and oysters annually -- the most in the lower 48 states. State scientists have begun to monitor water quality at the mouth of the Mississippi as the collective run-off and pump-off from Katrina enter the gulf and begin a slow drift westward. In a state that leads the nation in oyster and blue-crab production even a hint of pollution in fishing grounds could prove devastating to the state's fisheries industry with a dockside value of about $350 million. Louisiana is also the center of a thriving sports-fishing industry, valued at more than $1 billion a year. (See related article.[10])

A full accounting of the Katrina spill damage is months away. About a quarter of the oil has been recovered, the Coast Guard says. Some oil was simply atomized by the fierce winds of the storm. Other oil, which is ultimately biodegradable, evaporated in the constant hot weather since the storm passed. Some scientists also note that marshland is resilient and might recover in short order, depending on the magnitude of the spill and the speed of cleanup efforts.

Still, in some areas, workers have found pockets of neighborhoods and wetlands so thoroughly saturated in oil that land will have

to be dug up and carted away at enormous expense. Here in Nairn, acrid crude oil, shimmering like a rainbow in the baking summer heat, covers a storm-flooded marsh. Once-green grass lies black and matted in crude. On a ridge well beyond, the trunks of oak and hackberry trees are marked high up with grimy necklaces where the oil reached.

Getty Images/Newscom

Absorbent pads are used to collect spilled crude oil in a canal near Nairn, La.

Near a still-flooded oil pipeline terminal here in the storm-trashed wastelands of lower Plaquemines Parish, floodwaters from Hurricane Katrina carved a deep trench through the Mississippi River levee. It exposed and then ruptured a 20-inch diameter underground pipeline and sent thousands of barrels of crude oil into the marshes and ridges.

Earlier this week, two workers in hard hats, paddling in a green flatboat, tossed large, white, absorbent doilies, shaped like lily pads, onto the water in a slow motion dance to sop up the crude.

They were earning their money. The temperature reached a record 97 degrees; the air reeked of oily vapors; the men worked in full protective gear. But at least they could get at this oil.

From the total of about 40 spills, at least 90,000 barrels remain "unaccounted for," a Coast Guard spokesman says. Some large spills, including one near the port town of Venice at the tip of the Mississippi, are still inaccessible to cleanup workers, blocked by floodwaters and hurricane debris. All cleanup work has been halted since Hurricane Rita entered the Gulf earlier this week, sending tides lapping back into areas that had been draining and causing areas to be re-evacuated.

In Plaquemines and St. Bernard, salt tides inundated farmlands, fresh water marshes and cheniers -- the ancient, oak-clad ridges that are a peculiar and scenic feature of this lowland geography. Plaquemines officials fear that in some cases, the mucky residue left behind in storm-ravaged neighborhoods will be so tainted that it will delay or even prevent rebuilding efforts.

The mixture of sewage, rotting vegetation and oil -- particularly when oil is a heavy component -- has been devastating to aquatic birds. More than five million migratory birds, including a number of rare and endangered species, make use each year of the Louisiana estuary's marshes, swamps, bays and bayous. Coastal Louisiana also harbors the largest nesting population of bald eagles in the lower 48.

The state holds the earth's seventh largest wetland, America's largest estuary and 30% of all U.S. coastal marshes. In its midsection sits the Atchafalaya Basin holding the Atchafalaya Swamp, at one million acres the largest contiguous hardwood swamp in North America.

Yet the state's coastal ecosystem is less well known than places such as Chesapeake Bay, whose fishery production it dwarfs. It receives far less adulation than the Florida Everglades, though it shelters far more species of wildlife, fish and birds.

One reason Louisiana's coast suffers on the public-relations front is because it features almost no resort beaches nor is it home to a significant national park. It is also among the most industrialized wetlands in the world, with working oil wells and production facilities sharing the marshes and bayous with fishing camps. It's the portal through which 13% of the nation's imported oil and a third of the Gulf of Mexico's domestic production enters the U.S.

Though most state residents see this as a plus, Louisiana's estuary as a result isn't the nominally pristine place that national environmental groups like to rally behind.

Some scientists caution that the long-term damage may not be as great as now appears. Much like Katrina, Hurricane Andrew caused large saltwater surges in coastal Louisiana in 1992, resulting in sprawling areas of "salt burns" similar to those found in Plaquemines and St. Bernard parishes. "The remarkable thing was the resiliency of the system," says Robert Twilley, a coastal ecologist with Louisiana State University in Baton Rouge. Given time and the flushing effects of rain and normal freshwater tides, those marshes, their root systems in tact, all bounced back.

He has one caveat. "The system after an event like this is left stressed and very susceptible. The key with Andrew is that we had a long time between subsequent events. If we got another hurricane down the pike -- which is what bothers me about Rita in the Gulf now -- we could be in real trouble," Dr. Twilley adds.

A similar dynamic is at work with the oil strewn about by Katrina. "Crude is the least of the problem," says Dr. Paul Sammarco, a researcher at the Louisiana Universities Marine Consortium, who has performed research on the effects of oil spills. If contained and removed in time it usually leaves no lasting impact on marshes. But other petrochemicals likely to have been loosed by Katrina -- refined products like diesel or fuel oil or gasoline -- are much more toxic to wetlands, he says. Should large amounts of those settle into marshes and other lowland areas, "they are much more difficult to deal with."

The storm represents a dispiriting turn of events for a coast already under siege. It has been shrinking at a rate of about 25 square miles per year, owing in part to federal


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Workers put out oil-retainer strips

flood-control measures on the lower Mississippi River, begun in the 1920s. The flood system channeled the river between giant levees that largely shut off the 8,000-year-old silting process that had gradually built the Louisiana delta. Wetlands help protect inland areas from floods by slowing tides and creating miles-deep buffers that absorb the energy of wind and waves.

The natural erosion of the wetlands has been exacerbated by the dredging, over the past 50 years, of thousands of miles of bee-line canals. Dug with state and federal approval mostly by the oil and gas industry, the canals allowed salt water into the freshwater marshes and swamps, killing them off. The result: a massive pooling effect in which wetlands died off and sunk, leaving open water in their wake. This in turn exposes more marsh and even uplands to further erosion.

State officials, after resisting dealing with the problem for decades, have been lobbying in recent years for federal funds to finance a $13 billion coastal-restoration project. It would include restoration of barrier islands, marsh-rebuilding projects and the redirection of Mississippi River waters back toward their ancient job as a delta rebuilder. So far, though, only a small percentage of the funds requested has been granted.

Few suggest that even pristine wetlands would have fully shielded the coast from Katrina's destructive force. But many scientists say computer models developed by Louisiana State University and others show that the storm's fury could have been meaningfully diminished, perhaps saving some of the state's levees from the catastrophic breaks that occurred.

Some scientists such as Kerry St. Pe, who has worked on coastal restoration for the Louisiana Universities Marine Consortium, say the conditions of the wetlands of the St. Bernard and Plaquemines parishes contributed to the number of oil spills during Katrina. One example: Pipelines originally buried under the marsh 20 years ago had become more vulnerable to Katrina's surges as the landscape changed.

Benny Rousselle, the Plaquemines Parish president, says he heard of cases where, "the force of the storm surges forced a lot of pipelines to the surface, snapping them like sticks of dried spaghetti."

Some scientists say it's fruitless to repair Katrina's damage to New Orleans and other areas if a serious effort isn't made to fix the coast. Gary Fine, who runs a U.S. Department of Agriculture lab at Golden Meadow, La., is attempting to develop hurricane-hardy, salt-water tolerant plants to replenish Louisiana's coastal marshes. Rebuilding the delta would be "relatively cheap compared to what Katrina will likely cost," he says. "And what's the point of spending all that reconstruction money if, in the next hurricane, it's all washed away again?"

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